Chapter 4

Data Products

A data product is a grouping of primary and secondary data objects and their associated PDS labels resulting from a scientific observation. Three examples of a data product are a PDS labeled image, a spectrum, and a time series table. A data product is a component of a data set (see the *Data Set/ Data Set Collection Contents and Naming* chapter of this document).

Each data product is made up of one or more primary data objects, secondary data objects, and PDS data product labels.

Primary Data Object
A Primary data object is a grouping of data results from a scientific observation. The actual science data, such as an image or table, represents the measured instrument parameters.

Secondary Data Object
A Secondary data object is any data needed for processing or interpreting the primary data object. Each primary data object may have one or more associated secondary data objects. An example of a secondary data object is a histogram derived from an image.

A PDS data product label, expressed in Object Description Language (ODL) (see the *Object Description Language (ODL) Specification and Usage* chapter of this document), identifies, describes and defines the structure of the data. There may be a single label to describe the data product, or separate labels for each data object.

4.1 Data Product File Configurations

The grouping of primary and associated secondary data objects and their PDS label(s) into one or more physical files can be done in a variety of ways. An important consideration in choosing a file organization scheme for a data product is the intended use of the PRODUCT_ID data element. The PRODUCT_ID uniquely identifies an individual data product and can be based on physical file names.

Example:

An image (the data product in this example) is a color triplet having three primary data objects, stored in separate physical files, one for each of the red, blue, and green images. Each is uniquely identified by a PRODUCT_ID, additionally they are logically associated through the IMAGE_ID data element.

for the red image:

```
PRODUCT_ID          = "22A190-RED"
IMAGE_ID            = "22A190"
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for the blue image:
PRODUCT_ID = "22A190-BLUE"
IMAGE_ID = "22A190"

for the green image:
PRODUCT_ID = "22A190-GREEN"
IMAGE_ID = "22A190"

Figure 4.1 illustrates file configurations for a data product with a single data object.

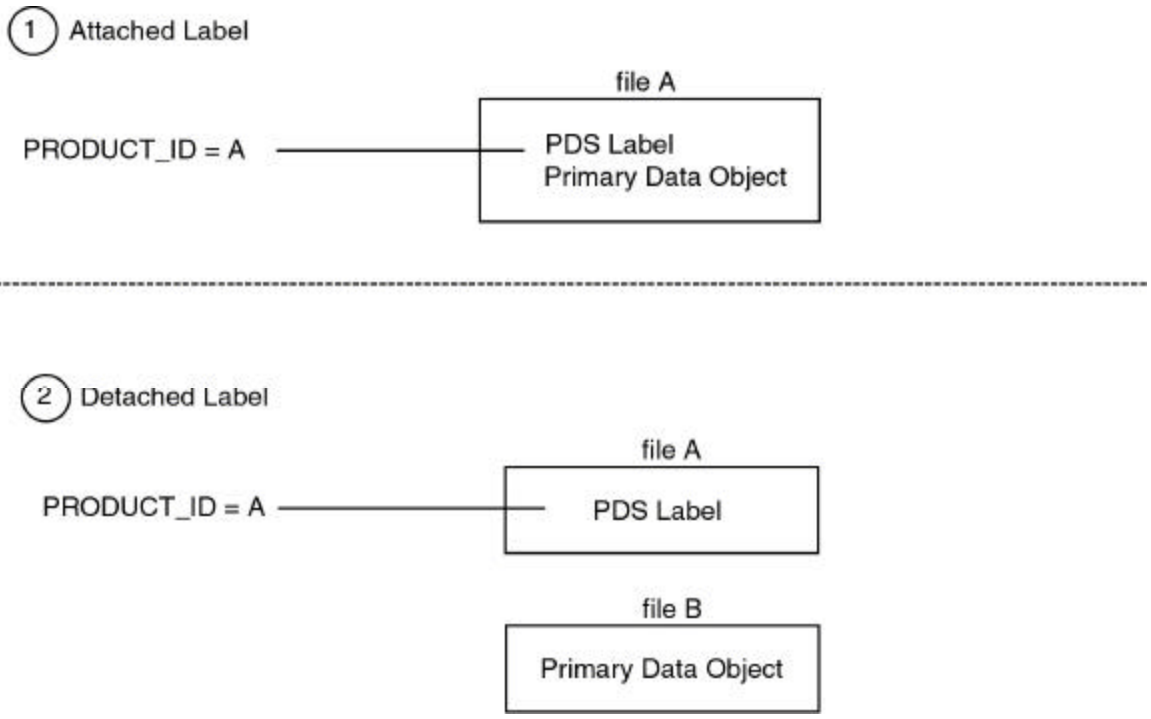

Figure 4.1 Data Product with a Single Data Object

For a data product having multiple data objects (one or more primary data objects and one or more secondary data objects), the assignment of the PRODUCT_ID is identified within the label of the data product file(s).

Figure 4.2 shows five possible file configurations for a single data product that consists of two data objects, a primary and secondary data object. Similar examples could be made using data products composed of several primary data objects.

Note that the use of options (2) and (4) would require a logical linking by another identification data element in each label.

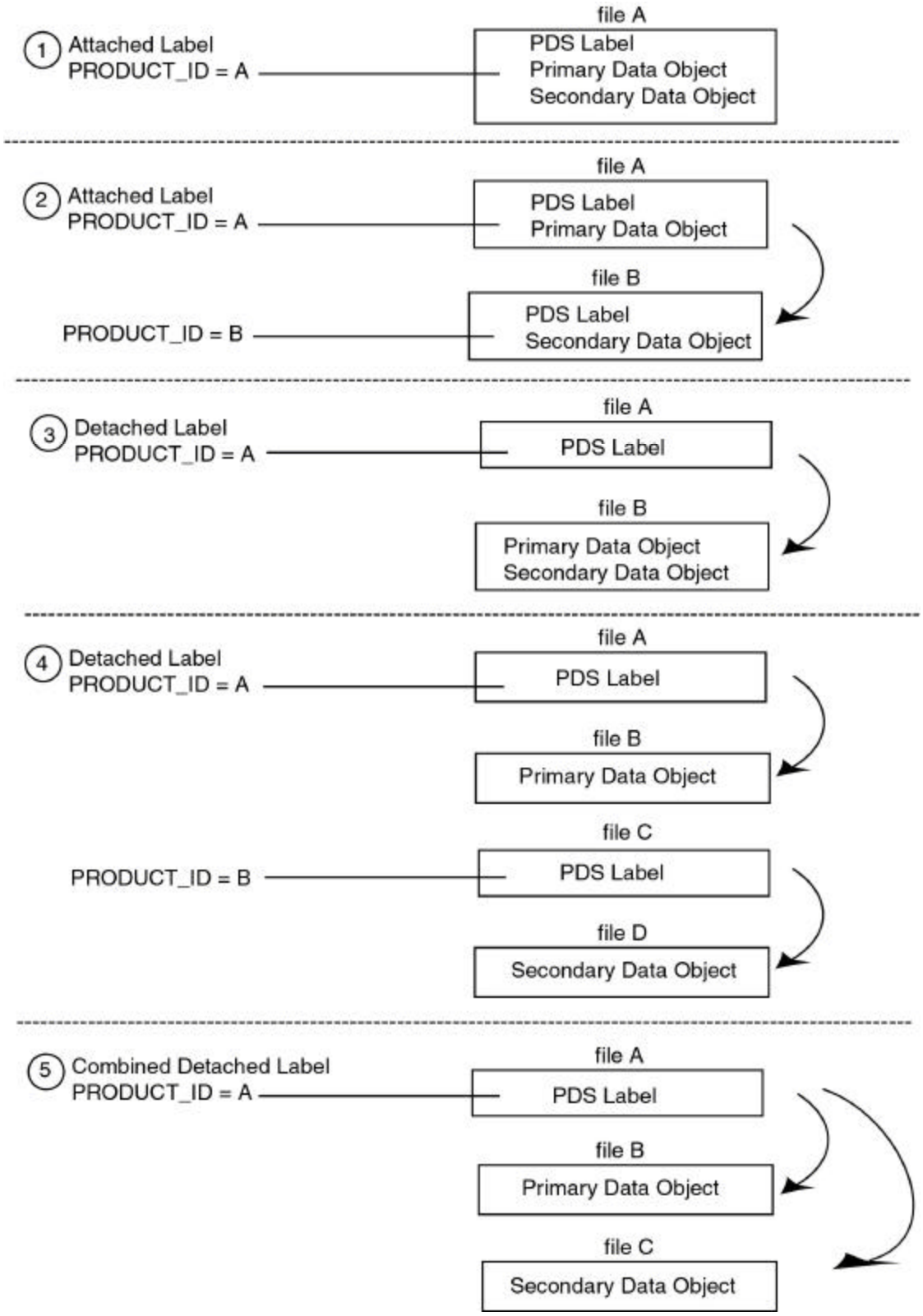

Figure 4-2. Data Product with Multiple Data Objects